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ABSTRACT

A study designed to examine the differences in quality ratings that 20 teachers in each of three senior high school curricular areas (business, English/social studies, and mathematics/science) gave to samples of written argument by college freshmen also investigated the relationship between the three groups of quality ratings and eight syntactic and mechanics-of-writing variables (such as words/T-unit and total number of words). Among the results of the study were that (1) the high school teachers, trained in different subject areas, displayed a high degree of consistency in rating college freshman writing; (2) English/social studies and mathematics/science teacher groups agreed more with each other than either did with the business teacher group, which gave the lowest quality scores; (3) there were high correlations among all the various mean quality ratings of the groups as well as between each separate mean rating and the number of words and the number of free modifiers the students wrote, while the opposite was evident for the syntactic complexity measures; and (4) the length of the compositions themselves and their freedom from errors in diction, spelling, and punctuation contributed most to the accountable variance. (AEA)

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Teachers' Writing Assessments Across The High School Curriculum

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Teachers' Writing Assessments Across the High School Curriculum

A central feature of the Bullock Report (1975) was the recommendation that every secondary school should develop a policy for language across the curriculum. In England, the impact of the recommendation has been considerable, and on this side of the Atlantic, it has become, in some areas at least, more than a mere slogan. Witness the language-across-the-curriculum theme of the 1980 Annual Conference of The Canadian Council of Teachers of English and the comprehensive review of the movement by Robinson and Gambell (1980) in The English Quarterly. In this context, it seems reasonable that any consideration of an across-the-curriculum approach to high school writing will have to take into account the present tendencies and perceptions teachers in various subject areas display as they assess student writing; and it was a concern about such tendencies and perceptions that gave rise to this study.

A number of recent investigations have explored some of the factors that seem to underlie the assessment of student writing by English teachers. These studies can be divided roughly into two groups: those that looked at

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various features of the writing product, and those that looked at factors relating to the teachers themselves who did the rating. As far as the product is concerned, a good deal of attention has recently been given to free modifiers or additions to a sentence which are loose, additive, non-essential, non-restrictive. Leonard (1977) and King (1978) found that the presence of such modifiers was an important discriminate of high school writing judged successful; and Nold and Freedman (1977) showed a similar influence for freshman exposition and argument. Along the same lines, Faigley (1979) found that the teaching of the Christensen (1968) generative rhetoric, which included the use of free modifiers, bore a significant relationship to improvement in overall quality ratings in freshman narrative writing. On the other hand, a good number of studies (Leonard, 1977; Harris, 1977; Nold and Freedman, 1977; Stewart and Grobe, 1979) indicate that syntactic complexity, and particularly the traditional syntactic maturity measure words-per-T-unit, is not generally positively associated with writing quality as perceived by English teachers. [Hunt's (1965) minimal terminable unit or T-unit was a principal clause plus all attached subordinate clauses.] As well, such investigators as Harris (1977), Stokes (1978), Freedman (1979) and Stewart and Grobe (1979) found that content, organization and the mechanics of writing often turned out to be better predictors of quality ratings than any of the syntactic measures.

When we come to factors relating to the raters themselves, the literature is much less extensive. Diederich, French, and Carlton (1961); and Meyers, McConville, and Coffman (1966), for example, sought to account for quality ratings by reference to characteristics of the judges such as their geographic region, sex, personal biases, and the like. Newcomb (1977) found that the holistic essay grade seventeen-year-olds received could be attributable in large measure to the reader who assigned it rather than to the writer's ability.

It was with this background in mind that the present investigators decided to do a survey that might take into account some of the above factors relating to the writing itself as well as one particular set of factors relating to the raters, namely the various curricular areas in which they were teaching. Thus the perspective of this study was widened to include teachers whose primary work lay outside the field of teaching writing, and this particular across-the-curriculum approach seemed appropriate in the light of present concerns.

Purpose

This study was designed to reveal differences in the quality ratings which teachers in three high school curricular areas give to representative samples of freshman writing in the argument mode. In addition, it examined

relationships between these ratings and eight common syntactic and mechanics-of-writing variables. More specifically, when senior high school teachers in three different curricular areas holistically grade freshman written argument -

(1) Would significant differences appear among the groups' mean quality ratings?

(2) What correlations exist among the various mean quality ratings and eight syntactic and mechanics-of-writing variables?

(3) To what extent can each of the eight syntactic and mechanics-of-writing variables predict the quality ratings of each of the three groups of teachers and the combined rating of all three groups?

Asking senior high school teachers to rate freshman writing seemed a good way to bring into focus the across-the-curriculum transition from high school to university. The three teaching areas -- business education, English-social studies, and mathematics-science -- appeared to span a wide curricular range. Written argument was chosen over other writing modes, for Crowhurst and Piche (1979) and Crowhurst (1980) showed that argument gives more scope for students to display variations in syntactic complexity. Finally, the eight non-teacher variables, in varying combinations and for various purposes, have all appeared in other studies of high school and freshman writing.

Method

Samples

The first task was to secure thirty representative samples of freshman writing in the argument mode. Early in 1980, 100 students in freshman writing classes at The University of New Brunswick were asked to suggest questions for impromptu written argument. Of the twenty-eight given, three proved to be the most popular. These related to TV advertising, teen-age consumption of alcohol, and the possible boycott of the Olympic Games by Canada. Each student was asked to choose one of these and be prepared to write 300 words or more on it during a specified 50-minute class. After the writing period, two English language professors and one graduate student rated the writing samples holistically on a scale of one to four. They followed the guidelines outlined by Cooper (pp. 11-12, 18-20) in Cooper and Odell's (1977) Evaluating Writing. The professor-in-charge had previously served as chief reader and coordinator of a province-wide high school writing assessment programme of the provincial Department of Education. Since the greatest inter-rater reliability (.90) was achieved with the Olympic Games samples, and since this group presented the widest range of quality and the most writing that seemed genuine argument, it was decided to eliminate the other samples, keep the Olympic group intact, with the exception of four incomplete samples, and use it in this study.

Ratings

The second task was to decide on the specific curricular areas from which volunteer teacher raters might be solicited, to circularize teachers in these areas, and to obtain quality ratings on the thirty freshman samples from the volunteers. After considerable discussion, three areas were selected: business education, English and social studies, mathematics and science. The investigators then contacted fifteen high schools throughout the province, got their cooperation, and distributed rating kits for use by the teachers who wished to participate in the various curricular areas. These kits consisted of (1) a short letter headed "Writing Perceptions Across the Curriculum -- Request for Scorers", (2) brief guidelines for reading and scoring the samples holistically. (These followed the Cooper, 1977, requirements mentioned above.), (3) the actual writing assignment given the students, (4) the thirty student samples on the Olympic Games question, typed exactly as written, with no changes or corrections included, and (5) a simple form on which each volunteer would record a rating for each sample, indicate the curricular area in which he was teaching, but not his name or school, and, if he wished, write a brief comment.

Below are portions of the actual assignment sheet given the students:

ARGUMENT: Giving reasons to support an opinion

First year students are asked to write a piece of argument to be used for a research study. The assignment is not compulsory. Student identity will be protected.

INSTRUCTIONS

.....

3. Write at least 1 1/2 pages of argument, expressing your own opinion of the statement chosen and your reasons for that opinion.

4. Pretend that your argument will be published as an article in our student newspaper The Brunswickan.

STATEMENTS

A. TV advertising should (or should not) be reduced.

B. Teenage consumption of alcohol is (or is not) a serious problem.

C. Canada should (or should not) boycott the Olympic Games in Moscow.

Measures

The third task was to collect the rating sheets from the three high school curricular areas, record individual teacher ratings for the thirty writing samples, and do certain syntactic and mechanics-of-writing analyses of the samples themselves. For each area, the investigators used the first twenty sets of ratings that were received and found that thirteen out of the fifteen high schools circularized were still represented adequately in the areas being studied. They then determined mean quality ratings for each of the thirty samples in business education, in English and social studies, in mathematics and science, and in the

three areas combined (the cross-curricular area). These and the other eight variables were symbolized as follows:

(1) BQ, the business education mean quality rating

(2) EQ, the English-social studies mean quality rating

(3) MQ, the mathematics-science mean quality rating

(4) CQ, the cross-curricular mean quality rating

(5) W, the total number of words written

(6) W/T, the words-per-T-unit ratio

(7) C/T, the clauses-per-T-unit ratio

(8) F, the total number of free modifiers

(9) F/T, the free modifiers-per-T-unit ratio

(10) S, the number of spelling errors per 100 words written

(11) P, the number of punctuation errors per 100 words written

(12) D, the number of diction or word-choice errors per 100 words written

Words-per-T-unit (W/T) and clauses-per-T-unit (C/T) are traditional syntactic maturity indicators. As indicated earlier, the number of free modifiers (F) had been singled out by Leonard (1977), Nold and Freedman (1977), King (1978), and Faigley (1979) as discriminates of successful writing. Free modifiers-per-T-unit (F/T) followed naturally. The error counts (S, P, D) represented the mechanics-of-writing aspect. Factors relating to content, organization and the like were not included in this survey.

Results

Rater Consistency

Disregarding differences of one point on the four-point scale, the mean percentage of teachers agreeing with the most common rating of each group was 86.7 for Business, 83.8 for English and Social Studies, and 85.5 for Mathematics and Science. This compares favourably with the experience of James Britton and his colleagues (1966) whose untrained three-man teams of raters, working separately at their own schools across the country, achieved reliabilities as high as .82. Also, maintaining all differences, the mean inter-item correlations for the three groups were .48, .48 and .51 respectively. This degree of rater agreement was unexpected, for the volunteer teachers had no specific training for their task and only the very minimum of written directions from the investigators. Perhaps the mere fact that they had freely volunteered their services has some bearing on their consistent performance.

Mean Ratings

Twenty high school business teachers rated thirty samples of freshman writing on a scale of one to four, and the mean rating for each of the samples, one through thirty, was determined. It was from this distribution of thirty means that the business quality (BQ) mean of 1.99, shown in Table 1, was derived. The other means in Table 1 were obtained in a

similar fashion. The cross-curricular (CQ) mean takes into account the ratings of all three groups of teachers combined.

Insert Tables 1 and 2 about here

On the average the business teachers gave lower ratings than the other two groups. Comparing the four means, two by two, and using t-tests for independent samples, all differences are significant at or beyond the .001 level except that between EQ and MQ, the English-social studies and mathematics-science means.

Table 2 shows the means and standard deviations for the eight variables which relate to the thirty writing samples themselves. In the fifty minutes given the students, on the average they produced about 320 words (W=319.66) of argument. W/T, W/C, F, and F/T, which are interpreted above, may be considered syntactic variables. It should be noted that F stands for the mean of the total number of free modifications structures the students used in initial, medial, and final sentence positions; it does not represent the percentage of words in final free modifiers or Faigley's (1979) "% Words in FFM". S, P, and D represent mean percentages of noted errors in the area of the mechanics of writing. One comparison seems in order, and that is that the W/T and W/C mean ratios

for this freshman writing in the argument mode are higher than those reported by Hunt (1965) for his grade twelve students writing freely and by Stewart and Grobe (1979) for their grade eleven students writing argument. Also, as might be predicted, these same ratios are considerably lower than those for Hunt's (1965) skilled adults.

Correlations for Variables

Insert Table 3 about here

Table 3 gives the simple correlations among the twelve variables being studied. Where the probability is below the .05 level, r is shown in parentheses. Positive correlations of over .90 prevail between the various pairs of mean quality ratings (BQ, EQ, MQ, CQ) teachers across the curriculum gave the freshman writing samples; and these quality ratings, in turn, relate positively ($r > .50$ and $p < .01$) to the total number of words written (W). The syntactic ratios (W/T and W/C) bear no significant relationship to the quality ratings, and this finding corresponds very closely with those of Faigley (1979) and Stewart and Grobe (1979). The total number of free modifiers produced by each student (F) correlates .50 with the quality ratings but not with the syntactic measures, and this relates quite well with Faigley's (1979) results. However, once F becomes part of a T-unit ratio (F/T), r is no longer significant. The percentages of

errors per hundred words (S, P, D) all show a high negative relationship (r= -.45 to -.65) to the quality ratings given by the three groups of high school teachers. Stewart and Grobe (1979) found a similar situation at the grade five, eight, and eleven levels.

Prediction of Quality Ratings

Insert Table 4 about here

The main results of four separate multiple stepwise regression analyses are consolidated in Table 4. The first analysis took the business teachers' mean quality ratings (BQ) as the dependent variable and the other eight non-quality items (W, W/T, W/C, F, F/T, S, P, D) as the independent or predictor variables. Similar analyses were done for EQ, MQ, AND CQ, each with the same set of predictor variables. This approach selected the single best predictor of Q first, then the second best predictor in combination with the first, and so on until no new predictive information was added to the equation. All eight predictors entered the final regression equations except that for EQ, where seven entered, and they accounted for between 60 and 70 per cent of the total variance (BQ, 63.3; EQ, 71.9; MQ, 69.5; CQ, 70.2).

The most powerful predictor for all the quality ratings was the number of diction or word-choice errors per hundred

words written (D); it accounted for about 40 per cent of the variance. This finding supports Grobe's (1981) work which found that vocabulary characteristics, particularly the number of different words that appeared in the composition (TYPES), accounted for a large portion of explainable quality score variance at the grade five, eight, and eleven levels. In regressing quality scores on over twenty variables, TYPES became the single 'best' predictor, replacing the total number of words (W), previously considered 'best' before TYPES information was available.

Per cent of spelling errors (S), total number of words (W), and per cent of punctuation errors (P) entered the equations at step two, three and four for BQ, EQ, MQ, and CQ, and they together contributed between 22 and 29 per cent to the accountable variance. In the earlier study, Stewart and Grobe (1979) found W characteristically entering at step one of the prediction-of-writing-quality equations. Here, however, it appears at steps two and three, being replaced by D at step one.

As in Stewart and Grobe (1979) and Grobe (1981), syntactic variables (W/T, W/C, F/T) all enter at the lower steps; and earlier in this report it was noted that none of these correlate significantly with the quality factors.

One anomaly seems present here. The total number of free modifiers (F) that the writers produced enters at steps six and seven of the equations and contributes only .1 to .5

per cent to the accountable variance. However, the correlation of F with the four quality variables is about .50 and significant beyond the .001 level. From this we can only conclude that, in the prediction equations, F is strongly related to other variables and that it actually contributed little new prediction information.

Conclusions

No firm conclusions can be drawn from this preliminary survey of the writing perceptions of these particular teachers across the particular curricular areas chosen. However, a number of interesting indications come to the fore. First, in spite of lack of training, these sixty high school teachers, scattered over a whole province and working in different subject areas, displayed a rather high degree of consistency when they rated freshman writing. Second, English-social studies and mathematics-science teacher groups agreed more with one another than either of these did with the business teacher group, which gave the lowest quality scores. Third, there were high correlations among all the various mean quality ratings of the groups as well as between each separate mean rating and the number of words and the number of free modifiers the student wrote. Just the opposite was evident for the syntactic complexity measures. In addition, the percentage of errors in spelling, punctuation and diction correlated negatively and

significantly with each quality rating. Fourth, as predictors of the quality ratings by all the teacher groups, the length of the compositions themselves and their freedom from errors in diction, spelling, and punctuation contributed most to the accountable variance. By way of contrast, free modifiers and syntactic complexity proved to be the weakest predictors of the eight selected for this study.

Implications

Newcomb (1977) concluded that the background of the reader rather than the performance of the writer largely determined the quality score he would receive. This preliminary survey, however, points to a fairly high level of implicit agreement among senior high school teachers across the curriculum as to what they consider to be 'good' writing and as to what factors influence them when they grade writing. This general consensus should help dispel fears about the prospect of seriously conflicting viewpoints; it augurs well for increased cooperation among teachers of various departments in their task of working together to help young people develop their writing competencies, both general and specialized.

The effect of vocabulary on quality judgements seems most pervasive. The total number of words (Stewart and Grobe, 1979), the number of different words (Grobe, 1981), and the number of errors in word choice (this study) can all relate significantly to writing scores given by a variety of teachers.

And, from these three studies, it appears that the variety and appropriateness of words used rather than the simple production of words is most important in influencing teachers' judgements. The minimal impact of syntactic factors and the relatively strong impact of mechanics-of-writing factors are again evident and again raise the question as to whether teachers should give more weight to the first set and less to the second (See Stewart and Grobe, 1979).

Finally, although this study took into account some factors relating to the raters or readers, and to syntax and mechanics-of-writing, it did not extend itself to such areas as content and organization or variation in the mode of discourse. Further research might place the present effort in a wider context and attempt to achieve a more balanced assessment of the complex sets of multivariate effects which apparently act together to produce 'quality' writing at the senior high school and freshman levels.

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TABLE 1

Comparison of Means and Differences Between Means of Teacher Quality Ratings: Business (BQ), English and Social Studies (EQ), Mathematics and Science (MQ), and Cross-Curricular (CQ) Groups N=30

Variable	Mean	SD	Difference	t-value	p level
BQ	1.99	.63			
EQ	2.26	.68	-.27	-6.56	.000
BQ	1.99	.63			
MQ	2.30	.69	-.30	-7.19	.000
BQ	1.99	.63			
CQ	2.18	.65	-.18	-7.40	.000
EQ	2.26	.68			
MQ	2.30	.69	-.03	-1.02	.316
EQ	2.26	.68			
CQ	2.18	.65	-.08	3.89	.001
MQ	2.30	.69			
CQ	2.18	.65	.11	5.39	.000

TABLE 2

Means and Standard Deviations for Means of Other Variables: Total Number of Words (W), Words per T-Unit (W/T), Words per Clause (W/C), Total Number of Free Modifiers (F), Free Modifiers per T-Unit (F/T), Percentage of Spelling Errors (S), Percentage of Punctuation Errors (P), Percentage of Diction Errors (D) N=30

Variable	Mean	Standard Deviation
W	319.66	77.64
W/T	16.63 (14.4)[a] (20.3)[b] (15.45)[c]	4.40
W/C	9.52 (8.6)[a] (11.5)[b] (8.19)[c]	1.45
F	9.06	3.60
F/T	.45	.18
S	2.00	1.86
P	1.57	1.08
D	1.64	1.50

[a]Hunt (1965), free writing, grade 12

[b]Hunt (1965), free writing, skilled adults

[c]Stewart (1979), written argument, grade 11

TABLE 3

Simple Correlations for all Variables

N=30

Variable	EQ	MQ	CQ	W	W/T	W/C	F	F/T	S	P	D
BQ	.94	.94	.97	.51	(-.13)	(-.06)	.50	(.16)	-.56	-.45	-.61
EQ		.96	.98	.58	(-.10)	(.00)	.49	(.15)	-.56	-.50	-.65
MQ	.96		.98	.59	(-.09)	(-.06)	.49	(.14)	-.57	-.46	-.63
CQ	.98	.98		.57	(-.11)	(-.04)	.50	(.15)	-.57	-.48	-.64
W					(.20)	(-.11)	.52	(.08)	(-.24)	(-.15)	(-.31)
W/T						.49	(-.03)	.39	.49	(-.15)	(.01)
W/C							(-.11)	(.23)	(.15)	(-.08)	(-.01)
F								.73	-.39	-.39	-.38
F/T									(-.10)	(-.30)	(-.23)
S										.50	.39
P											(.29)

$P < .05$ when $r \pm .349$ $p < .01$ when $r \pm .449$

Values in parentheses are not significant.

TABLE 4

Predictors of Teacher Quality Ratings Resulting from Four Multiple Stepwise Regression Analyses[a]

N=30

Step	Dependent Variable	Predictor Variable	R	Cumulative Per Cent of Accountable Variance	Per Cent Unique Contribution to Accountable Variance
1	BQ	D	.615	37.8	37.8
	EQ	D	.656	43.1	43.1
	MQ	D	.631	39.9	39.9
	CQ	D	.646	41.8	41.8
2	BQ	S	.707	50.0	12.1
	BQ	W	.766	58.7	15.6
	MQ	W	.758	57.5	17.6
	CQ	W	.756	57.3	15.4
3	BQ	W	.767	58.9	08.9
	EQ	P	.821	67.4	08.7
	MQ	S	.813	66.1	08.6
	CQ	S	.813	66.2	08.9
4	BQ	P	.780	60.9	02.0
	EQ	S	.839	70.5	03.0
	MQ	P	.826	68.3	02.2
	CQ	P	.830	68.9	02.6
5	BQ	W/T	.782	61.2	00.2
	EQ	F/T	.841	70.8	00.3
	MQ	F/T	.828	68.6	00.2
	CQ	F/T	.831	69.1	00.2
6	BQ	F	.783	61.4	00.1
	EQ	W/C	.844	71.3	00.5
	MQ	F	.829	68.8	00.2
	CQ	F	.833	69.4	00.3
7	BQ	F/T	.795	63.3	01.9
	EQ	F	.847	71.9	00.5
	MQ	W/T	.833	69.4	00.6
	CQ	W/T	.836	70.0	00.5
8	BQ	W/C	.796	63.3	00.0
	EQ				
	MQ	W/C	.833	69.5	00.2
	CQ	W/C	.837	70.2	00.2

[a]With the exception of that for EQ, all predictor variables entered the final regression equation.